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Ineke Sweeney

Name

Signature

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AF 13721  
Irw

Case 8609

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the Application of :  
Papsdorf, et al. : Confirmation No. 2737  
Serial No: 09/905,274 : Group Art Unit 3721  
Filed: July 13, 2001 : Examiner S. Tawfik  
For: A Continuous In-Line Pleating Apparatus and Process

Mail Stop Appeal Brief - Patents  
Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

APPEAL BRIEF

Dear Sir:

This is Appellants' Brief relating to an appeal from the May 17, 2004 Final Rejection in the above-identified Application. The Notice of Appeal was deposited with a Certificate of Facsimile transmission and addressed to Commissioner for Patents, Alexandria, VA 22313-1450 on September 17, 2004, and was noted as received in the U.S. PTO on September 17, 2004.

I. Real Party in Interest

The real party in interest for the present Application S.N. 09/905,274 is The Procter & Gamble Company of Cincinnati, OH by virtue of the Assignment recorded on September 4, 2001, at Reel No. 012147, Frame 0177.

II. Related Appeals and Interferences

There are no related appeals or interferences known to Appellants' undersigned legal representative, which will directly affect, or be directly affected by or have a bearing on, the Board's decision in the present appeal.

### III. Status of Claims

In the Notice of Appeal, Appellants appealed the final rejection of all pending Claims 1-27. The complete copy of the appealed Claims is set forth in the Appendix.

Claims 1, 2, 4-6, 8, 13-19, 21-23, and 25-27 stand finally rejected under 35 U.S.C. §102(b) over Levers, et al., U.S. Patent No. 3,800,676. Claims 3, 7, and 9 stand finally rejected under 35 U.S.C. §103(a) over Levers. Claims 10-12, 20, and 24 stand finally rejected under 35 U.S.C. §103(a) over Levers in view of Benedict, U.S. Patent No. 2,314,757.

### IV. Status of the Amendments

An amendment filed under 37 C.F.R. §1.113 was filed by Appellants on July 1, 2004 in response to the Final Office Action dated May 17, 2004. In the Advisory Action dated August 23, 2004, the Examiner indicated that the Amendments had been entered and overcame the Final Rejection under 35 U.S.C. §112, ¶2. There has been no amendment to the claims filed after receipt of the Advisory Action dated August 23, 2004.

### V. Summary of the Invention

The invention on appeal relates to an in-line apparatus for pleating a web. (p. 1, l. 4) The pleated web may be useful for the manufacture of pleated filter elements. (p. 1, ll. 4-5) Forming pleats quickly and reliably in glass microfiber media challenges existing pleating equipment. (p. 1, ll. 10-11) Glass microfiber media material tends to have memory and is highly elastic in bending and resists plastic deformation. (p. 1, ll. 11-13) Material that bends elastically will generally not take a set when folded and can spring back to its original shape if not controlled properly. (p. 1, ll. 13-14) Additionally, glass microfiber media can also be delicate to handle and can be damaged if strained excessively. (p. 1, ll. 14-15) Thus, a filter requiring a small pleat height can create further challenges for manufacturing due to geometrical and physical constraints. (p. 1, ll. 15-17)

Existing approaches for creating pleats in glass microfiber media include pusher bar and rotary score pleaters. Both pleater systems create pleats parallel to the cross-machine direction of a web substrate. (p. 1, ll. 24-25) However, both systems can be relatively slow and can lack control of the media during the pleating process. (p. 1, l. 26 – p. 2, l. 5)

Current machine direction pleaters currently utilize chains, to ride inside V grooves to constrain a web between shaping guides, or belts to converge a web material. (p. 2, ll. 9-27) However, both methods either produce poor pleats in elastic webs or lack the ability to control webs that bend elastically. (p. 2, l. 12 – p. 3, l. 2)

According to independent Claim 1, a web pleating apparatus having a mutually orthogonal machine direction, a cross-machine direction, and a Z-direction has first and second series of elongate spaced protuberances converging in the machine direction. (p. 7, ll. 18-23) Further, the first and second series of protuberances interleave in the Z-direction. (p. 8, ll. 17-19) Additionally, the first and second series of interleaved protuberances are capable of folding a pleatable web into a

generally pleated pattern of machine direction pleats upon contact of the web with the first and second series of protuberances. (p. 7, ll. 18-19)

Claim 2 requires the apparatus to have a machine direction inlet and machine direction outlet wherein the web maintains contact with the first and second series of interleaved protuberances from the inlet to the outlet. (p. 7, l. 27 – p. 8, l. 1; p. 8, ll. 5-7)

Claim 3 requires the converging elongate spaced protuberances to be blades. (p. 7, ll. 19-21)

Claim 4 requires the apparatus to further comprise a converging tunnel disposed downstream in the machine direction of the first and second series of interleaved protuberances to receive the web. The pleated web is constrained by the converging tunnel to maintain the pleated pattern when the web is within the converging tunnel. (p. 14, ll. 7-9)

Claim 5 requires the converging tunnel to comprise an arcuate cavity for receiving the web. (p. 14, ll. 9-10)

Claim 6 requires the apparatus to further comprise a drive roll for pushing the pleatable web into the interleaved protuberances. (p. 9, l. 16 – p. 10, l. 2)

Claim 7 requires the first and second spaced protuberances to have a first coefficient of friction and the drive roll to have a second coefficient of friction wherein the second coefficient of friction is greater than the first coefficient of friction. (p. 11, ll. 24-27)

Claim 8 requires the apparatus to further comprise a heater for heating the pleated web. (p. 13, ll. 10-12)

Claim 9 requires the apparatus to further comprise a cooler downstream from the heater for cooling the web. (p. 13, ll. 25-26)

Claim 10 requires the apparatus to further comprise a scoring device that is capable of imparting indentations on the pleatable web prior to the pleatable web contacting the first and second series of converging space protuberances. (p. 6, ll. 11-14)

Claim 11 requires the scoring device to comprise first and second axially rotatable rolls having mutually parallel axes wherein the first and second rolls comprise inter-engaging corrugations for imparting the indentations upon the pleatable web. (p. 6, l. 27 – p. 7, l. 17)

Claim 12 requires the first and second rolls to be constrained to maintain a fixed gap that is less than the thickness of a pleatable web interposed between the first and second rolls during operation. (p. 6, ll. 24-26)

Claim 13 requires the first and second series of protuberances to be spaced apart in the cross-machine direction. (p. 7, ll. 26-27)

According to independent Claim 14, a method for forming a pleatable web comprises the steps of providing a pleatable web (p. 6, ll. 6-7), scoring the pleatable web in the machine direction (p. 6, ll. 11-20), transporting the scored web relative to a first and second series of machine direction converging elongate spaced protuberances interleaved in the Z-direction (p. 7, l. 18 – p. 8, l. 9), and folding the scored web with the interleaved first and second series of converging protuberances so

that the interleaved converging protuberances pleat the pleatable web in the machine direction (p. 8, ll. 2-7).

Claim 15 requires the further step of forming the pleated web into an arcuate shape. (p. 14, ll. 7-10)

Claim 16 requires that the web be formed into an arcuate shape by providing a forming tunnel having a cross-section converging from a generally linear inlet to an outlet having a generally arcuate shape and inserting the web into the tunnel. (p. 14, ll. 10-15)

Claim 17 requires that the folding plastically deform the pleatable web. (p. 10, ll. 5-6)

Claim 18 requires the step of transporting the pleatable web to comprise pushing the pleatable web relative to the first and second series of converging elongate in interleaved spaced protuberances. (p. 7, ll. 18 – p. 8, l. 13)

Claim 19 requires the step of heating the pleated web. (p. 13, ll. 10-12)

Independent Claim 20 claims a filter comprising a pleated web (p. 6, ll. 6-7), scoring the pleatable web (p. 8, ll. 11-16), transporting the scored web relative to a first and second series of interleaved converging elongate spaced protuberances (p. 7, l. 18 – p. 8, l. 16), and folding the scored web with the interleaved first and second series of converging protuberances so that the interleaved converging protuberances pleat the pleatable web (p. 8, ll. 12-19)

Independent Claim 21 claims a web pleating apparatus having first and second series of non-colinear elongate spaced protuberances converging in the machine direction (p. 7, ll. 23-24), the first and second series of protuberances interleave in the Z-direction ((p. 8, ll. 17-19), the first and second series of interleave protuberances are capable of folding a pleatable web into a generally pleated pattern of machine direction pleats upon contact of the web with the first and second series of protuberances (p. 7, ll. 18-19).

Claim 22 requires the apparatus to further comprise a drive roll for pushing the pleatable web into the interleaved protuberances. (p. 9, l. 16 – p. 10, l. 2)

Claim 23 requires a first side of the pleatable web to contact the first series of spaced protuberances and a second side of the pleatable web to contact the second series of spaced protuberances when the pleatable web contacts the web pleating apparatus. (p. 8, ll. 2-12)

Claim 24 requires the web pleating apparatus to further comprise a scoring device wherein the scoring device is capable of imparting indentations to the pleatable web prior to the pleatable web contacting the first and second series of converging spaced protuberances. (p. 6, ll. 11-14)

Independent Claim 25 claims a web pleating apparatus comprising a first and second series of collectively elongate spaced protuberances converging in the machine direction (p. 7, ll. 23-24), the first series of protuberances and second series of protuberances interleave in the Z-direction (p. 8, ll. 17-19), the first and second series of interleaved protuberances are capable of folding a pleatable web into a generally pleated pattern of machine direction pleats upon contact of the web within the first and second series of protuberances (p. 7, ll. 18-19).

Claim 26 requires the arcuate cavity to have a radius that is decreasable in the machine direction. (p. 14, ll. 11-12)

Claim 27 requires the arcuate cavity to have a substantially uniform radius. (p. 14, ll. 7-16)

## VI. Issues

A. Are Claims 1, 2, 4-6, 8, 13-19, 21-23, and 25-27 novel under 35 U.S.C. §102(b) over *Levers*, et al., U.S. Patent No. 3,800,676?

B. Are Claims 3, 7, and 9 unobvious under 35 U.S.C. §103(a) over *Levers*?

C. Are Claims 10-12, 20, and 24 unobvious under 35 U.S.C. §103(a) over *Levers* in view of *Benedict*, U.S. Patent No. 2,314,757?

Appellants respectfully assert that Claims 1, 2, 4-6, 8, 13-19, 21-23, and 25-27 are novel over the *Levers* reference. Appellants also respectfully assert that Claims 3, 7, and 9 are unobvious over the *Levers* reference. Appellants further respectfully assert that Claims 10-17, 20, and 24 are unobvious over the *Levers* reference in view of *Benedict*.

## VII. Grouping of Claims

The claims do not stand or fall together. Claims 3, 6, and 22 stand or fall separately from Claims 1-2, 4-5, 7-21, and 23-27, because Claims 3, 6, and 22 have material limitations not found in the other claims.

## VIII. Argument

As set forth below, the invention defining the appealed claims is novel over the cited references under 35 U.S.C. §102(b) and unobvious over the cited references under 35 U.S.C. §103(a). Therefore, all rejections under 35 U.S.C. §102(b) and 35 U.S.C. §103(a) should be reversed.

### A. Claims 1, 2, 4-6, 8, 13-19, 21-23, and 25-27 Are Novel Over the *Levers* Reference.

Claims 1, 2, 4-6, 8, 13-19, 21-23, and 25-27 are finally rejected under 35 U.S.C. §102(b) over *Levers*, et al., U.S. Patent No. 3,800,676 (the '676 reference). The '676 reference teaches improved tobacco smoke filters prepared from a web of synthetic polymeric fibers having applied to at least one surface thereof, a film-forming derivative of cellulose. (Abstract) In the preparation of filter rods, the web is directed to a flexing device which fractures or partially destroys the continuous structure of the film thereby increasing the flexibility of the web. (3:34-39) The flexing device is comprised of a plurality of roll pairs, at least one roll of each pair being circumferentially grooved. (3:51-53) Next, patterning rolls, at least one roll of the roll pair having a patterned surface, are adapted to afford a plurality of permanently depressed areas in the substrate. (4:1-4) Roll pairs are positioned substantially transverse to the tow path and are arranged with parallel axes. (4:4-6) The rolls are mounted to cause at least some permanent depression of the tow as it passes therebetween.

(4:11-14) Preferred rolls are circumferentially or helically grooved and have from about 5 to about 80 grooves per inch. (4:42-45) The patterning rolls are preferably two inches in diameter and have a width that is determined by the width of the web being structured. (5:6-10) After flexing and transverse stretching, the web is then directed to a plasticizer to make the resulting web tacky. (5:13-17) The resulting web is then directed into a filter rod maker where the web is condensed into tobacco smoke filter rods and cut to length. (5:41-49)

In sum, the '676 patent discloses a tobacco smoke filter making apparatus that utilizes patterned rolls to form cracks in a polymeric coated web substrate.

The Examiner states, "Levers discloses method [*sic*] and apparatus for forming pleatable [*sic*] web having a mutually orthogonal machine direction, a cross machine direction and a Z-direction, see for example (Fig. 1) the apparatus comprising a first series of **elongate spaced protuberances** converging in the cross machine direction (Fig. 1; via upper rollers 24); a second series of **elongate spaced protuberances** converging in the machine direction (Fig. 1; via lower rollers 24), wherein the first series of protuberances and the second series of protuberances interleave in the Z-direction (Fig. 1);...."<sup>1</sup> Appellants disagree. In addition, the Examiner states that, "... and the first series and the second series of interleaved protuberances being capable of folding a pleatable web into a generally pleated pattern of machine direction pleats upon 'the pushable' engagement of the web relative to the first and second series of protuberances...."<sup>2</sup> Again, Appellants disagree.

With regard to Claim 2, the Examiner contends that the *Levers* reference indicates that, "... the web [maintains contact] with the first series and the second series of interleaved protuberances from the inlet to the outlet (Fig. 1, note that the web is continuous [*sic*] web)."<sup>3</sup> Again, Appellants disagree.

What is clear is that the prior art does not teach, disclose, or even remotely suggest the claim limitations as presented in Appellants' Claims 1 and 2. Appellants' Claim 1 claims a web pleating apparatus comprising, *inter alia*, a first series of elongate spaced protuberances converging in the cross-machine direction and a second series of elongate spaced protuberances converging in the cross-machine direction. Additionally, Appellants' independent Claims 21 and 25 both claim first and second series of non-colinear elongate spaced protuberances and collectively elongate spaced protuberances, respectively. One of skill in the art would understand that "elongate" means stretched out; lengthened; having a form notably long in comparison to its width.<sup>4</sup> Since Appellants' claimed invention requires elongate spaced protuberances; i.e., have an aspect ratio greater than 1, it is hard to understand how the rolls, as disclosed in *Levers*, can be considered elongate. A roll has an aspect ratio of 1. Further, it is difficult for Appellants to understand how grooves disposed upon rolls can be construed as elongate protuberances, even if the Examiner

<sup>1</sup> Jan. 6, 2004 Office Action, p. 2 (emphasis added)

<sup>2</sup> May 17, 2004 Office Action, p. 3

<sup>3</sup> *Id.* (emphasis added)

<sup>4</sup> *Webster's Third New International Dictionary of the English Language, Unabridged*



“interoperate [*sic*] elongate as length wise [*sic*] regardless of [*sic*] it is patterned or not.”<sup>5</sup> Additionally, *Levers* does not disclose how the rolls are capable of folding a pleatable web into a generally pleated pattern of machine direction pleats, as required by Appellants.

Additionally, it is difficult to understand how the ‘676 reference can be construed to provide the web substrate discussed therein as maintaining contact with the rolls from the process inlet to outlet, as required by Appellants’ Claim 2. Fig. 1 of the ‘676 reference and the disclosure therein provides a plurality of roll pairs. The web substrate passes between consecutive roll pairs. Assuming, *arguendo*, that the grooves disposed upon the rolls forming flexing device 22 and patterning rolls 24 of the *Levers* reference are elongate, as soon as the web substrate passes between a pair of opposed rolls, the only contact point is a point tangent to both rolls. After contact with this point, the web substrate loses contact with the roll. Contact by the rolls with the web substrate is not maintained.

Appellants respectfully believe that it is not geometrically possible for a web substrate to pass between consecutive roll pairs as disclosed in the *Levers* reference without losing contact therebetween. Therefore, it is apparent that ‘676 reference does not teach or disclose Appellants’ claimed invention.

In any case, the ‘676 simply does not teach, disclose, or even remotely suggest each and every element of Appellants’ claimed invention. In particular, the ‘676 reference does not disclose a web pleating apparatus having first and second series of elongate spaced protuberances, each converging in the cross-machine direction and interleaving in the Z-direction, as required by Appellants’ claims. Accordingly, the rejection of the instant claims under 35 U.S.C. §102(b) over the ‘676 reference should be withdrawn.

**B. Claims 3, 7, and 9 Are Unobvious Over the *Levers* Reference.**

Claims 3, 7, and 9 are finally rejected under 35 U.S.C. §103(a) over *Levers*, et al., U.S. Patent No. 3,800,676 (the ‘676 reference). As discussed *supra*, the ‘676 reference teaches the use of a plurality of consecutive opposed rolls to provide permanently depressed areas in a substrate passed therebetween. Inasmuch as the ‘676 reference does not teach, disclose, or even suggest each and every element of Appellants’ Claim 1 for the reasons cited *supra*, if Claim 1 is unobvious under 35 U.S.C. §103(a), Claims 3, 7, and 9 are also unobvious under 35 U.S.C. §103(a). Accordingly, the rejection of Claims 3, 7, and 9 under 35 U.S.C. §103(a) over the ‘676 reference should be withdrawn.

**C. Claims 10-12, 20, and 24 Are Unobvious Over *Levers*, et al., in View of *Benedict*.**

Claims 10-12, 20, and 24 are finally rejected under 35 U.S.C. §103(a) over *Levers*, et al., U.S. Patent No. 3,800,676 (the ‘676 reference) in view of *Benedict*, U.S. Patent No. 2,314,757 (the ‘757 reference). As discussed *supra* the ‘676 reference teaches the use of a plurality of consecutive

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<sup>5</sup> May 17, 2004 Office Action, p. 7

opposed rolls to provide a plurality of permanently depressed areas in a substrate passed therebetween. The '757 reference provides scoring rolls into which a foundation sheet is passed for stretching the paper laterally along lines only wide enough to give the sheet an increased tendency and ease for being folded. (1:39-52) The scored roll is then pulled through the apparatus by a drive shaft geared to actuate the scoring rolls at the precise linear travel of the foundation sheet. (2:28-31) In sum, the '757 reference pulls a sheet material from between two scoring rolls through a plurality of stationary wires.

The Examiner states, "Levers does not disclose ... a scoring device prior to the pleatable station wherein the scoring device comprises first and second axially rotatable rolls and maintaining a fixed gap therebetween. However, Benedict discloses a similar web pleating apparatus comprising a scoring device [comprising] a first and second axially rotatable rolls (Fig. 1, via rollers 15 and 16) and maintaining a fixed gap therebetween...."<sup>6</sup> The Examiner concludes that, "therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified Levers' web pleating apparatus by having a scoring device comprising first and second axially rotatable rolls and maintaining a fixed gap therebetween, as suggested by Benedict."<sup>7</sup>

However, it is clear that the '676 reference and '757 reference, alone or in combination, do not teach Appellants' steps of transporting the scored web relative to a first and second series of interleaved converging elongate spaced protuberances, and folding the scored web with the interleaved first and second series of converging protuberances wherein the interleaved converging protuberances pleat the pleatable web, as required by Appellants' Claim 20. Thus, it is hard to understand how Appellants' claims could have been obvious to one having ordinary skill in the art at the time the invention was made to produce Appellants' claimed invention.

In any case, the '676 reference, in view of the '757 reference, simply does not teach or suggest each and every element of Appellants' claimed invention. In particular, the combination of the cited references does not disclose a filter comprising a scored pleatable web transported relative to a first and second series of interleaved converging elongate spaced protuberances and subsequently folded by the converging protuberances to pleat the pleatable web. Accordingly, the 35 U.S.C. §103(a) rejection of the instant claims over the '676 reference in view of the '757 reference should be withdrawn.

#### D. Claims 4, 6, and 22 Contain a Further Limitation Not Found in the Cited Prior Art.

Claim 3 depends from Appellants' Claim 1 and requires the converging elongate spaced protuberances to be blades. Claim 6 depends from Appellants' Claim 1 and further requires the web pleating apparatus to comprise a drive roll for pushing the pleatable web into the interleaved protuberances. Likewise, Claim 22 depends from Appellants' Claim 21 and requires the web

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<sup>6</sup> Jan. 6, 2004 Office Action, p. 5

<sup>7</sup> *Id.*, pp. 5-6



pleating apparatus to comprise a drive roll for pushing the pleatable web into the interleaved protuberances.

The prior art does not reach a web pleating apparatus having the limitations presented in Appellants' Claims 3, 6, and 22. Accordingly, Claims 3, 6, and 22 should be allowable.

#### IX. Conclusion

The Examiner has not satisfied the burden of demonstrating that Appellants' claimed invention is anticipated and/or obvious over the cited references. Specifically, nothing in the cited references, when taken individually or even in combination with Appellants' specification, teaches, discloses, or even remotely suggests Appellants' web pleating apparatus.

Thus, for the reasons stated above, the Board is respectfully requested to find Claims 1-27 of the instant Application allowable over the references cited by the Examiner.

Respectfully submitted,

By 

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November 17, 2004  
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APPENDIX  
Appealed Claims: Serial No. 09/905,274

1. (Currently Amended) A web pleating apparatus having a mutually orthogonal machine direction, a cross machine direction and a Z-direction, the apparatus comprising:

a first series of elongate spaced protuberances converging in the cross-machine direction;

a second series of elongate spaced protuberances converging in the cross-machine direction;

wherein said first series of protuberances and said second series of protuberances interleave in the Z-direction; and,

said first series and said second series of interleaved protuberances being capable of folding a pleatable web into a generally pleated pattern of machine direction pleats upon contact ~~the pushable engagement~~ of said web relative to said first and second series of protuberances.

2. (Original) The web pleating apparatus of Claim 1 wherein said apparatus has a machine direction inlet to said first and second series of elongate spaced protuberances and said apparatus has a machine direction outlet from said first and second series of elongate spaced protuberances wherein said web maintains contact with said first series and said second series of interleaved protuberances from said inlet to said outlet.

3. (Original) The web pleating apparatus of Claim 1 wherein said converging elongate spaced protuberances are blades.

4. (Original) The web pleating apparatus of Claim 1 further comprising a converging tunnel disposed downstream in the machine direction of said first and second series of interleaved protuberances to receive said web and wherein said pleated web is constrained by said converging tunnel to maintain said pleated pattern when said web is within said converging tunnel.

5. (Original) The web pleating apparatus of Claim 4 wherein said converging tunnel comprises an arcuate cavity for receiving said web.

6. (Original) The web pleating apparatus of Claim 1 further comprising a drive roll for pushing said pleatable web into said interleaved protuberances.

7. (Original) The web pleating apparatus of Claim 6 wherein said first and second spaced protuberances have a first coefficient of friction and said drive roll has a second coefficient of

friction and wherein said second coefficient of friction is greater than said first coefficient of friction.

8. (Original) The web pleating apparatus of Claim 1 further comprising a heater for heating said pleated web.

9. (Original) The web pleating apparatus of Claim 8 further comprising a cooler for cooling said web and being disposed downstream from said heater.

10. (Original) The web pleating apparatus of Claim 1 further comprising a scoring device wherein said scoring device is capable of imparting indentations to said pleatable web prior to said pleatable web contacting said first and said second series of converging spaced protuberances and wherein said indentations are aligned with said first and said second series of converging elongate spaced protuberances.

11. (Original) The web pleating apparatus of Claim 10 wherein said scoring device comprises first and second axially rotatable rolls having mutually parallel axes, each of said first and second rolls comprising inter-engaging corrugations for imparting said indentations upon said pleatable web.

12. (Original) The web pleating apparatus of Claim 11 wherein said first and second rolls are constrained to maintain a fixed gap therebetween, said gap being less than the thickness of a pleatable web interposed between said first and second rolls during operation of said apparatus.

13. (Original) The web pleating apparatus of Claim 1 wherein said first series of protuberances and said second series of protuberances are spaced apart in the cross-machine direction.

14. (Previously Presented) A method for forming a pleatable web comprising the steps of:

providing a pleatable web;

scoring said pleatable web in the machine direction;

transporting said scored web relative to a first series and second series of cross-machine direction converging elongate spaced protuberances interleaved in the Z-direction; and,

folding said scored web with said interleaved first series and second series of converging protuberances wherein said interleaved converging protuberances pleat said pleatable web in the machine direction.

15. (Original) The method of Claim 14 further comprising the step of:

forming said pleated web into an arcuate shape.

16. (Original) The method of Claim 15 wherein said step of forming said web into an arcuate shape comprises the steps of:

providing a forming tunnel having a cross-section converging from a generally linear inlet to an outlet having a generally arcuate shape; and,

inserting said web into said tunnel.

17. (Original) The method of Claim 14 wherein said folding plastically deforms said pleatable web.

18. (Original) The method of Claim 14 wherein the step of transporting said pleatable web relative to said interleaved first and second series of converging elongate spaced protuberances comprises pushing said pleatable web relative to said interleaved first and second series of converging elongate spaced protuberances.

19. (Original) The method of Claim 14 further comprising the step of:

heating said pleated web.

20. (Currently Amended) A filter which comprises:

a pleated web formed by providing a pleatable web, scoring said pleatable web, ~~pushably~~ transporting said scored web relative to a first and second series of interleaved converging elongate spaced protuberances, and, folding said scored web with said interleaved first and second series of converging protuberances wherein said interleaved converging protuberances pleat said pleatable web.

21. (Previously Presented) A web pleating apparatus having a mutually orthogonal machine direction, a cross-machine direction, and a Z-direction, the apparatus comprising:

a first series of non-collinear elongate spaced protuberances converging in the cross-machine direction;

a second series of non-collinear elongate spaced protuberances converging in the cross-machine direction;

wherein said first series of protuberances and said second series of protuberances interleave in the Z-direction; and,

said first series and said second series of interleaved protuberances being capable of folding a pleatable web into a generally pleated pattern of machine direction pleats upon contact of said web with said first and second series of protuberances.

22. (Original) The web pleating apparatus of Claim 21 further comprising a drive roll for pushing said pleatable web into said interleaved protuberances.

23. (Original) The web pleating apparatus of Claim 21 wherein said pleatable web has a first side and a second side opposed thereto, said first series of spaced protuberances contacting said first side and said second series of spaced protuberances contacting said second side when said pleatable web contacts said web pleating apparatus.

24. (Original) The web pleating apparatus of Claim 23 further comprising a scoring device, wherein said scoring device is capable of imparting indentations to said pleatable web prior to said pleatable web contacting said first and second series of converging spaced protuberances and wherein said indentations are aligned with said first and second series of converging spaced protuberances.

25. (Previously Presented) A web pleating apparatus having a mutually orthogonal machine direction, a cross-machine direction, and a Z-direction, the apparatus comprising:

a first series of collectively elongate spaced protuberances converging in the cross-machine direction;

a second series of collectively elongate spaced protuberances converging in the cross-machine direction;

wherein said first series of protuberances and said second series of protuberances interleave in the Z-direction; and,

said first series and said second series of interleaved protuberances being capable of folding a pleatable web into a generally pleated pattern of machine direction pleats upon contact of said web within said first and second series of protuberances.

26. (Previously Presented) The web pleating apparatus of Claim 5, wherein said arcuate cavity has a radius, said radius being decreasable in said machine direction.

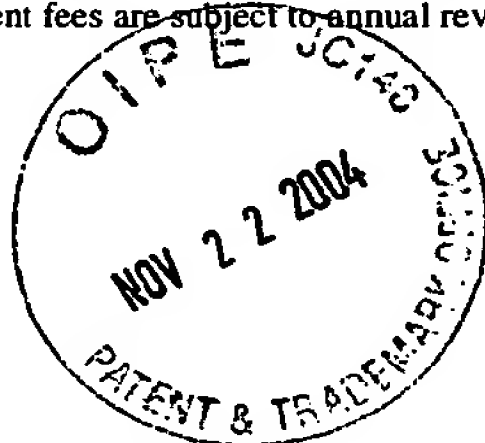
27. (Previously Presented) The web pleating apparatus of Claim 22, wherein said arcuate cavity has a substantially uniform radius.





# FEE TRANSMITTAL for FY 2004

Patent fees are subject to annual revision.



## Complete if Known

Application Number	09/905,274
Confirmation Number	2737
Filing Date	July 13, 2001
First Named Inventor	Papsdorf
Examiner Name	S. Tawfik
Art Unit	3721
Attorney Docket No.	8609

TOTAL AMOUNT OF PAYMENT (\$340.00)

## METHOD OF PAYMENT

1. ☒ The Director is hereby authorized to charge indicated fees submitted on this form, credit any over payments, and charge any additional fee(s) during the pendency of this application to:

Deposit Account Number: 16-2480

Deposit Account Name: The Procter &amp; Gamble Company

## FEE CALCULATION

### 1. BASIC FILING FEE - Large Entity

Code	(\$)	Fee Description	Fee Paid
1001	770	Utility filing fee	<input type="checkbox"/>
1002	340	Design filing fee	<input type="checkbox"/>
1004	770	Reissue filing fee	<input type="checkbox"/>
1005	160	Provisional filing fee	<input type="checkbox"/>

SUBTOTAL (1) (\$)☐

### 2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE - Large Entity

	Extra Claims	Fee from Below	Fee Paid
Total Claims	<input type="checkbox"/> - 20** = <input type="checkbox"/> x <input type="checkbox"/>	<input type="checkbox"/>	= <input type="checkbox"/>
Independent Claims	<input type="checkbox"/> - 3** = <input type="checkbox"/> x <input type="checkbox"/>	<input type="checkbox"/>	= <input type="checkbox"/>
Multiple Dependent	<input type="checkbox"/>	<input type="checkbox"/>	= <input type="checkbox"/>

\*\* or number previously paid, if greater; For Reissues, see below

Code	(\$)	Fee Description
1202	18	Claims in excess of 20
1201	86	Independent claims in excess of 3
1203	290	Multiple dependent claim, if not paid
1204	86	**Reissue independent claims over original patent
1205	18	**Reissue claims in excess of 20 & over original patent

SUBTOTAL (2) (\$)☐

## FEE CALCULATION (continued)

### 3. ADDITIONAL FEES

Code	(\$)	Fee Description	Fee Paid
1051	130	Surcharge-late filing fee or oath	<input type="checkbox"/>
1052	50	Surcharge-late provisional filing fee or cover sheet	<input type="checkbox"/>
1053	130	Non-English specification	<input type="checkbox"/>
1812	2,520	For filing a request for <i>ex parte</i> reexamination	<input type="checkbox"/>
1804	920*	Requesting publication of SIR prior to Examiner's action	<input type="checkbox"/>
1805	1,840*	Requesting publication of SIR after Examiner's action	<input type="checkbox"/>
1251	110	Extension for reply within 1 <sup>st</sup> month	<input type="checkbox"/>
1252	420	Extension for reply within 2 <sup>nd</sup> month	<input type="checkbox"/>
1253	950	Extension for reply within 3 <sup>rd</sup> month	<input type="checkbox"/>
1254	1,480	Extension for reply within 4 <sup>th</sup> month	<input type="checkbox"/>
1255	2,010	Extension for reply within 5 <sup>th</sup> month	<input type="checkbox"/>
1401	330	Notice of Appeal	<input type="checkbox"/>
1402	340	Filing a brief in support of an appeal	<input checked="" type="checkbox"/>
1403	290	Request for oral hearing	<input type="checkbox"/>
1451	1,510	Petition to institute a public use proceeding	<input type="checkbox"/>
1452	110	Petition to revive - unavoidable	<input type="checkbox"/>
1453	1,330	Petition to revive - unintentional	<input type="checkbox"/>
1501	1,330	Utility issue fee (or reissue)	<input type="checkbox"/>
1502	480	Design issue fee	<input type="checkbox"/>
1460	130	Petitions to the Commissioner	<input type="checkbox"/>
1807	50	Processing fee under 37 C.F.R. 1.17(q)	<input type="checkbox"/>
1806	180	Submission of Information Disclosure Statement	<input type="checkbox"/>
1809	770	Filing a submission after final rejection (37 CFR § 1.129(a))	<input type="checkbox"/>
1810	770	For each additional invention to be examined (37 CFR § 1.129(b))	<input type="checkbox"/>
1801	770	Request for Continued Examination (RCE)	<input type="checkbox"/>
1802	900	Request for expedited examination of a design application	<input type="checkbox"/>
1454	1330	Acceptance of unintentionally delayed claim for priority under 35 U.S.C. 119, 120, 121, or 365 (a) or (c)	<input type="checkbox"/>

Other fee (specify) ☐Other fee (specify) ☐

\* Reduced by Basic Filing Fee Paid SUBTOTAL(3) (\$)[340.00]

## SUBMITTED BY

Name (Print/Type)	Peter D. Meyer	Registration No. (Attorney/Agent)	47,792	Telephone	(513) 634-9359
Signature				Date	November 17, 2004

This collection of information is required by 37 CFR 1.17. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon individual case. Any comments on the amount of time you are required to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P. O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.